A NOTE FROM THE PUBLISHER - Welcome to the latest version of the ARCADIAN!
This year we are providing a quarterly format. Most of the things I wanted
to say have been stated by Don; to add - besides the Astrocade Inc. demise
late last year, both Alternative Engineering and CPU/Home Arcade Electronics
are in bankruptcy, Nitron, the game cartridge manufacturer closed their doors,
and most of the software houses have moved on to other computers. We ask that
you give your support to the stalwarts who have been able to stick with the
Arcade unit - check their ads...
As of now, all back issues are $15 each Volume (=year)   R.Fabris

the ARCADIAN

Robert Fabris, back again
3626 Morrie Drive
San Jose, CA. 95127

the SOURCE TCD 959

FIRST CLASS

SORRY!

I would like to sincerely apologize for this issue being so late. It turned out that being the editor of the ARCADIAN involved a lot more than I thought. I am, however, already preparing the next issue, which will be about twice the size of this one, and have at least two GREAT programs included. Our thanks go out to all the software writers who have given us permission to use many of the programs that were at one time offered for sale at anywhere from $10 to $30 apiece! Many of these will be included in our future issues. STAY TUNED!!!

Don Gladden

WE'RE BACK!!!

Welcome back to the ARCADIAN! After careful consideration, we have decided that there is still enough interest out there to warrant publication of a quarterly issue. Although this issue is a bit loose and unformatted, starting with the next issue, we would like to have some regular columns, and at least three major programs per issue. Games, business, home use, educational, utilities, ANY kind of programs are solicited. If you have any that you think we can use, PLEASE send them in. Tutorials and general interest articles are also desired.

Some of the features to come: A checksum program to make keying in programs easier. It will automatically check for errors so you can correct them before you run the program. A machine language entry program so that we can publish machine language programs too. Some columns We'd like to have are: Question-Answers, "Shorties" (Programs), "The Tool Box" (Programming utilities), "Astrocade News", and who knows what else!!! Send in your suggestions. We would like to have your input as to what you would like to see in the ARCADIAN. Send suggestions, programs, articles, etc. to: Don Gladden, 59400 Nine Mile Rd., South Lyon, MI 48178.

ASTRO-NEWS

Well ASTROCADE finally went under! Yep, the company is unfortunately, no more. We've had many questions about this, and will try to answer as many as possible in this article. As for cartridge availability, there are still many cartridges available through different sources. Look for ads in the ARCADIAN. Also, there WILL be new cartridges available soon. We have heard that the SOCCER, CONAN, and MUSIC MAKER cartridges will be finished and produced by some third-party suppliers. Also, I am aware of at least one new cartridge under development. (Not telling what yet!!) There is one little known-about cartridge available now, LIFE (the computer simulation), by Richard Deigler. Look for his ad on the last page.

As to availability of Astrocade units, When the present supply runs out, That will most likely be "all she wrote". I do not think that anyone else will pick up where they left off. So if you want a back-up unit, you better get one now.

To answer another question, The "ASTRO-BUGS" user group has dissolved. (Due to lack of interest). Although the Niagara B. U. G. is still active. However, We may have another "ASTRO-BASH" this fall. Write me if you are interested and look for an announcement in the ARCADIAN.

If there are any hardware hackers out there who would be interested and able to figure out the circuitry for the MUSIC MAKER cartridge, (Needs a tape interface like BASIC), please get in touch with us. We have the program for the cartridge, and could produce it if we can get circuit boards made up. Also, if you have a game or other program that you would like to see on a cartridge, and would be able to do it for you for about $25.00. There were quite a few BASIC programs written that, in my opinion, deserve to be on a cartridge. We're working on it.

Also, if you have written any short machine-language programs or routines, we would like to see them Please send them in!

<2>

PLAIN BASIC TALK BY KEN LILL

AN EDITORIAL SERIES FOR NON-HACKERSS THAT WANT TO KNOW HOW & WHY

MAKING SINGLE PLAYER GAMES INTO MULTI-PLAYER GAMES

HAVE YOU EVER MADE OR BOUGHT A GAME THAT WAS A ONE PLAYER GAME AND WANTED IT TO BE A MULTI PLAYER GAME, BUT WHEN YOU CHECK OUT THE VARIABLES, YOU FIND THAT THERE AREN'T ENOUGH LEFT TO DO WHAT YOU WANT? MAYBE THESE LITTLE TIPS MAY HELP YOU.

THE FIRST THING THAT YOU WILL WANT TO DO IS TO MAKE A LISTING OF ALL OF YOUR VARIABLES, WHAT EACH ONE DOES, AND WHAT LINE IT IS ON IN YOUR PROGRAM. JUST BY CAREFULLY LOOKING AT YOUR LIST, YOU MAY FIND THAT YOU ARE ABLE TO CHANGE SOME OF YOUR VARIABLES TO ONE YOU HAVE ALREADY USED. A GOOD RULE OF THUMB IS TO SET UP A VARIABLE 'MAP' OR CHART. TRY TO USE ONLY SO MANY OF YOUR VARIABLES FOR YOUR LOOPS AND THE VARIABLES THAT WON'T BE CHANGING FROM PLAYER TO PLAYER. KEEPING THIS NUMBER TO A MINIMUM WILL MAKE IT EASIER TO KEEP TRACK OF THINGS. IT ALSO HELPS TO KEEP THEM IN AN ORDER LIKE A-D. THE NEXT THING IS TO TRY TO KEEP THE THINGS THAT ARE CHANGING FROM PLAYER TO PLAYER IN ALPHABETICAL ORDER, ALSO. THIS MAKES IT EASIER TO WRITE THE LINE(S) THAT TAKE CARE OF PLAYER CHANGES.

TO WRITE THE BASIC LINES THAT DO THIS IN EXTENDED BASIC ARE REALLY PRETTY EASY. HERE IS AN EXAMPLE:

```
100 DATA @(0+P),E,F,G,H,I,J,K;RETURN
110 DATA E,@(0+P),@(1+P),@(2+P),@(3+P),@(4+
P),@(5+P),@(6+P);RETURN
```

THE ONLY THING THAT YOU WILL HAVE TO WORRY ABOUT HERE IS THAT THE VARIABLE P IS 'STEPPED' AT LEAST BY 7 FOR EACH PLAYER. A GOOD WAY TO DO THIS IS TO MAKE P = THE PLAYER-UP MINUS 1 TIMES 7. OR TO PUT IT ANOTHER WAY, LET'S ASSUME THAT THE PLAYER UP VARIABLE IS U. THIS LINE WILL CALL UP YOUR VARIABLE CHANGES:

```
50 GOSUB 90;GOSUB 100;U=U+1;GOSUB 90;GOSUB
110;GOTO 20
```

THE LINE NUMBER 90 LOOKS LIKE THIS:

```
90 P=(U-1)b7;RETURN
```

BY USING THIS TECNIQUE, YOU'LL FIND THAT YOU CAN KEEP TRACK OF A LOT MORE THINGS AND YOU CAN ADD FEATURES THAT YOU NEVER DREAMED YOU HAD THE SPACE FOR, LIKE MAKING IT POSSIBLE TO HAVE 'HAND' CONTROLS THAT AREN'T IN THE 'NORMAL' ORDER. FOR EXAMPLE, PLAYER NUMBER 1 CAN BE PLUGGED INTO HAND CONTROL PORT # 4, PLAYER #3 IN PORT 1, ETC. ALSO IF YOUR GAME HAS TO DO WITH SPEED, YOU CAN KEEP TRACK OF EACH PLAYERS INDIVIDUAL ACCOMPLISHMENT

TO DO THIS IN ASTROBASIC IS A LITTLE BIT MORE CUMBERSOME, BUT IT CAN STILL LET YOU KEEP TRACK OF MORE THAN YOU THOUGHT POSSIBLE

FORM THE 1800 BYTES. LINE 90 WILL STAY THE SAME IN THIS CASE, AS WELL AS LINE 50. THE CHANGES COME IN THE LINES 100 AND 110.

```
100 FOR A=0TO 12STEP 2;@(Ac2+P)=%(P+A+20010)
;NEXT A;RETURN
110 FOR A=0TO 12STEP 2;%(P+A+20010)=@(Ac2+P)
;RETURN
```

THIS WILL PLACE ALL OF YOUR VARIABLES INTO THE @() STRING ACCORDINGLY. THE MAIN CONCERN HERE SHOULD BE WHETHER OR NOT YOU HAVE THE SIZE (SZ) REMAINING FOR THE @()STRINGS THAT YOU NEED (14 NEEDED HERE +1 AS YOU CANNOT WRITE INTO THE LAST BYTE OF YOUR SIZE).

ANOTHER IDEA IS TO KEEP THESE ROUTINES 90,100,110 BELOW YOUR MAIN PROGRAM AREA, AS THEY ARE ONLY USED AFTER ONE PLAYER HAS FINISHED AND THE NEXT PLAYER IS GETTING READY TO PLAY. THE SHORT PAUSE CAUSED BY THESE 3 ROUTINES WILL GIVE THE NEXT PLAYER A CHANCE TO GET HIS BEARINGS STRAIGHT BEFORE HE HAS TO DO HIS THING.

ANOTHER LITTLE SPACE SAVING TIP FOR THE CHECKING TO SEE IF YOUR MOVING OBJECT IS TO USE THE ABS() COMMAND WHEN IT WILL WORK. LET'S SAY THAT YOU WANT TO CHECK FROM -69 TO 70. TO WRITE THE ABS() FOR THAT, TRY THIS:

```
40 IF ABS(X-(X)0))69GOTO 200
```

ANY COMMAND CAN REPLACE THE GOTO 200, BUT AS I ALWAYS SAY, KEEP YOUR IF STATEMENTS AS SHORT AS FEASIBLY POSSIBLE. NOW LET'S CHECK OUR MATH AND SEE IF IT WILL WORK. IF X=-70, IT WILL THEN MAKE OUR PROBLEM LOOK LIKE THIS: IF ABS(-70=(-70)0))69, WHICH SAYS: IF ABS(-70=(0))69 OR IF ABS(-70))69 OR IF 70)69GOTO 200 HOW WE'LL GO THE OTHER WAY. WE'LL MAKE X=70. IF ABS(70=(70)0))69 OR IF ABS(70=(1))69 OR IF 69)69 AS YOU CAN SEE, THE NUMBER MUST BE EITHER -70 AND BELOW OR 71 AND ABOVE FOR THE GOTO TO BE REACHED IN THIS CASE. TRY EXPERIMENTING WITH DIFFERENT COMBINATIONS BEFORE YOU GIVE UP ON TRYING THIS. YOU'LL BE AMAZED AT HOW MANY OF THE 'BOUNDARY CHECKING' IF STATEMENTS CAN BE PUT INTO 1 IF ABS() RATHER THAN 2 SEPERATE IF STATEMENTS THAT USE UP ONE MORE LINE NUMBER.

THE MAIN THING TO REMEMBER ABOUT LINES IN YOUR PROGRAM. THE MORE LINES THAT YOU HAVE IN YOUR PROGRAM, THE LONGER IT WILL TAKE TO EITHER GOTO OR GOSUB A LINE NEAR THE END. THE FEWER NUMBER OF LINES, THE FASTER IT WILL GET THERE.

IN ASTROBASIC, USE ABREVIATIONS FOR AS MANY OF THE PRINTED WORDS AS POSSIBLE. IT MAY LOOK BETTER IF YOU SAY "SCORE:=150" ON THE SCREEN, BUT SAYING "S:150" WILL TAKE UP LESS BYTES, GET THE POINT ACROSS, AND TAKE UP LESS SCREEN SPACE.

<3>

MORTGAGE AMORTIZATION

```
     LOWERCASE = 1-BYTE KEYPAD WORDS.  UNDERSCORES
     = SPACES.      1879 CHARACTERS

1   .MORTGAGE_AMORTIZATON_PROGRAM
2   .BY_BOB_WEBER
3   .BLUE_RAM_OR_VIPERSOFT_BASIC_ONLY
4   .*******************************
5   .DIRECTIONS;_TO_USE,_INPUT_ALL
6   .INTEREST_RATES_AND_MONEY_AMOUNTS
7   .TO_INCLUDE_2-DIGITS_PAST_THE
8   .DECIMAL_POINT._EXAMPLE:_50000.00
9   .*******************************
10  ;return ;clear ;NT=20;BC=32;FC=68
20  print "*AMORTIZATION*
25  for Z=2to 107;@(Z);@=48;next Z;@(64)=50;@(6
    5)=49
32  print ;print "input PRINCIPAL";A=0;gosub 10
    00
42  print "input INTEREST_RATE";A=18;gosub 10
    00
45  $=@(18),@(54),@(18)
48  print "input MONTHLY_PAYMENT";A=36;gosub
    1000
60  input "MONTH"P;for Z=72to 89;@(Z)=48;next
    Z;input "YEAR"R;M=1
70  print ;print ;print "MONTH-INTEREST-BALAN
    CE
75  for Z=54to 71;@(Z)=48;next Z
80  print ;print #2,P,
100 #x=@(2),@(18),@(90),@(36);$=@(90),@(54);$
    =+@(90),@(90),$=+@(90),@(72)
140 $=@(90),@(90),@(0);$=@(0),@(0),@(0);A=
    0;gosub 4000
210 M=M+1;P=P+1;if P=13P=1;goto 230
220 goto 80
230 gosub 500
235 print "PAYMENT;_";A=36;gosub 400
    0
240 goto 70
500 print "TOTAL_INTEREST-",#1,R;A=54
    ;gosub 4000;R=R+1;return
1000 for Z=4=17to 41;@step -1;@(Z)=KP;next W=@(Z)
    ;;if @(Z)=4;goto 1040
1010 if @(Z)=38;Z=48;goto 1040
1020 if @(Z)=31;Z=Z+2
1030 next Z;print ;"_TOO_LARGE!";goto 5040
1040 @(Z)=KP;TV=@(Z);@(Z-1)=KP;TV=@(Z-1)
1050 print ;for C=Ato A=5;@(C)=48;next C
1060 for B=Zto A+17;@(B);C=C+1;next B
1070 for B=Cto A+17;@(B)=48;next B;return
4000 if @(A+17)=5;goto 5040
4005 for Z=A+15to A+step -1;if @(Z)#48print
    "_",;next 4020
4010 next Z;print "___";goto 4030
4020 for B=Zto A+8step -1;TV=@(B);next B
4030 print "_",;TV=@(A+7);TV=@(A+6);return
5000 $=@(0),@(36),@(0)
5005 print "_____0
5207 gosub 500;R=R+1
5208 print ;print ;print "******_SYNOPSIS_**
    ****
5209 print "PAYMENT;_";A=36;gosub 40
    00
5010 print "LAST_PAYMENT";,;A=0;gosub 10
    00
    4000
5015 print ;print #1,M,"_PAYMENTS
5220 print "TOT_INTEREST;";A=72;gosub 4000
5025 print ;print "LOAN_PAID_OFF;_",#1,P,"_
    ,R;,M=M+1;A=0;gosub 6115
5040 if KPrun
6000 print ;input "input #_OF_MONTHS"M
6005 if M<2goto 6000
6010 #x@(18),@(0),@(36);$=+@(54),@(54),@(54);
    $+@(18),@(54),@(90),@(90),@(72)
6020 print "COMPUTING!
6050 for Z=1to M;$=@(72),@(90),@(72);next Z
6080 $=@(72),@(54),@(72);$@(36),@(72),@(36)
    ;@(60)=49;@(62)=48;$=@(36),@(54),@(36)
6100 @(53)=48;for Z=36to 41;@(Z)=48;next Z
6110 print "MONTHLY_PAYMENT;";A=36;gosub 400
    0
6115 for Z=54to 71;@(Z)=48;next Z;for Z=1to
    M;$=@(54),@(36),@(54);next Z;if A=0$=@(54),@(
    0),@(54)
6116 print ;print "TOTAL_AMOUNT_PAID";;A=54;
    gosub 4000
6120 print ;return
```

Both of these Programs, (Mortgage Amortization and Checkbook Balancer), were written back in the 70s by Bob Weber and sold commercially. Unfortunately, they were written in the old BASIC, and used the on-board calculator routines that were not included in the new BASIC. These versions were adapted for extended BASIC, so will work with BLUE RAM or VIPERSOFT. Maybe someone could adapt them for the new BASIC???

We are recieving more requests for this type of program, (business, home applications, etc.) If you've written any, or know someone who has, why not send them in so we can all share them???

<6>

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BLUE RAM or VIPER SOFT only CHECKBOOK BALANCER & COMPOUND INTEREST

```
1 .CHECKBOOK_BAL._&_COMPOUND_INT.
2 .BY_BOB_WEBER
3 .********************************
4 .DIRECTIONS:_INPUT_ALL_INTEREST
5 .RATES_AND_AMOUNTS_TO_INCLUDE_THE
6 .TWO_DIGITS_BEYOND_DECIMAL_POINT.
7 .EXAMPLE:_6.00_INTEREST
8 .OR_160.00_DOLLARS._WHEN_DONE_WITH
9 .ENTRIES_PRESS_GO_OR_RETURN.
10 DEFAULT;clear ;NT=0
20 O=0;BC=rnd (32)x8;FC=BC+7;for Z=0to 89;@(
   Z)=48;next Z
30 print ;print ;print ;print "___1-CHECKBOO
   K_BALANCER
40 print "___2-COMPOUND_INTEREST
50 if KP=50goto 200
55 if KP=49goto 60
56 goto 10
60 print "input STATEMENT_BALANCE";A=0;gosub
   1000
70 print "CHECKS_NOT_ON_STATEMENT";A=18;gosu
   b 1000
75 if Q=igoto 90
80 $-@(0),@(18),@(0);goto 70
90 print "DEPOSITS_NOT_ON_STATEMENT";A=18;go
   sub 1000
95 if Q=2goto 110
100 $+@(0),@(18),@(0);goto 90
110 print "FINAL_AMOUNT_IN_CHECKBOOK_SHOULD_
    BE:_#";A=0;gosub 2000
120 goto 20
200 @(18)=49
210 print "input DEPOSIT";A=18;gosub 1000
220 print "input INTEREST_PER_YEAR";A=36;gos
    ub 1000
230 $+@(36),@(0),@(36)
240 print "input #_OF_TIMES_PER_YEAR_INTERES
    T_IS_COMPOUNDED";A=54;gosub 1000
245 if Q=10=2;@(Z-1)=48;gosub 1050
250 $+@(36),@(54),@(36)
260 print "input #_OF_YEARS";A=72;gosub 1000
265 if Q=10=2;@(Z-1)=48;gosub 1050
267 print "COMPUTING:
270 $x@(54),@(72),@(0);$+@(0),@(0),@(0);$+@
    (0),@(36),@(54);$+@(0),@(36),@(36);$-@(72),@(
    0),@(72)
320 $-@(72),@(0),@(72);if @(89)=56goto 400
340 $x@(36),@(0),@(36);goto 320
400 $x@(18),@(36),@(36)
410 print "ORIGINAL_DEPOSIT:";A=18;gosub 200
    0
420 print "NEW_AMOUNT";A=36;gosub 2000
430 goto 20
1000 for Z=A+10to A+10step -1;@(Z)=KP;TV=@(Z
    );if @(Z)=3;Z=Z-2
1010 if @(Z)=13@(Z)=48;Q=Q+1;return
1020 if @(Z)=46goto 1040
1030 next Z;print "_TOO_LARGE!";goto 20
1040 @(Z)=KP;TV=@(Z);@(Z-1)=KP;TV=@(Z-1)
1050 for C=Ato A+5;@(C)=48;next C
1060 for B=Z-1to A+17;@(C)=@(B);C=C+1;next B
1070 for B=Cto A+17;@(B)=48;next B;print ;re
    turn
2000 if @(A+16)#48print "OVERFLOW!";goto 20
2005 if @(A+17)=56print "-";
2010 for Z=A+15to A+8step -1;;if @(Z)#48goto
    2030
2030 for B=Zto A+8step -1;TV=@(B);next B
2040 print ".";;TV=@(A+7);TV=@(A+6);print ;r
    eturn
```

PRODUCT REVIEW: SOCCER

The SOCCER cartridge, which was never officially released by ASTROCADE, is one of the best! You have so many options at the beginning of the game that you wonder if you'll ever get through all the menus!!! But seriously, the game is very well simulated with each player, (one can be the computer if you wish), controlling a five-man team. You control the man with the ball until he passes to another player. (Similar to FOOTBALL). You have a lot of options--how many directions to pass the ball, where the boundaries lie, and difficulty, (on a one-player game). Well, you say, where can I get it? We will be supplying them very shortly. Watch for an ad in the ARCADIAN soon.

<7>

PARASCHOT

BY TIM WHITE

THIS IS A ONE PLAYER GAME. THE OBJECT IS TO PARACHUTE
TO A LANDING PAD, THEN PICK UP THE PARATROOPER. TRIGGER #1
STOPS THE CRAFT AND "GERONAMO"! JOYSTICK DOWN OPENS THE
PARACHUTE, AND JOYSTICK LEFT OR RIGHT GUIDES YOU TO THE
LANDING PAD, AND MOVES THE SPACECRAFT FOR "BEAM UP". THE
MOMENTARY ARROW SHOWS WIND DIRECTION, BUT NOT VELOCITY. THE
LONGER YOU WAIT, THE GREATER YOU SCORE!

LOWERCASE WORDS ARE 1-BYTE KEYPAD WORDS. UNDERSCORES ARE SPACES.

[SZ=506]

```
PARASCHOT
BY TIM WHITE

1 S=0;T=0
5 clear ;FC=rnd (32)x8-1;NT=1;NM=0;TA=12;TB=5;TC=137;VB=2;VR=40;VF=1
6 line -80,-44,4;for A=-79to 79step 3;line A,rnd (5)-44,1;next A
7 box rnd (60)-30,-39,15,10,1
8 for A=1to 20;box rnd (160)-B1,rnd (56)-28,1,1,1;next A
10 B=20237;for A=0to 27;%(B)=*(A);B=B+1;next A
11 %(20244)=-9999;V=0;H=0;C=128;%(20247)=C;%(20254)=C
20 W=rnd (5)-3;if W=0goto 20
21 if W>0CX=0;CY=0;print "→"
22 if W<0CX=0;CY=0;print "←"
23 for A=1to 200;next A;box 0,0,10,10,2
30 for Z=65to -65step -4;CY=36;CX=Z;print "+*+";CY=36;CX=Z-2;print "
-#-
31 if TR(1)#1next Z
40 B=20265;for A=31to 38;%(B)=*(A);B=B+1;next A
45 V=3;H=Z+79
50 V=V+3;MU=-V+50;if V>72goto 201
60 %(20251)=Vx256+H
70 CALL20237
80 %(20244)=%(20251)
90 if JY(1)#-1goto 50
91 Q=Vx10
95 MU="→";box Z+4,-V+37,3,5,2
100 B=20265;for A=41to 48;%(B)=*(A);B=B+1;next A
101 %(20244)=-9999
110 V=V+1;H=H+W+JX(1)
115 if V>70V=70;goto 160
120 %(20251)=Vx256+H
130 CALL20237
140 %(20244)=%(20251)
150 goto 110
160 if PX(H-76,-V+35)S=S+Q;goto 200
161 goto 205
200 box H-76,-V+42,10,3,2;goto 500
```

<8>

```
201 CY=12:print "_____SC0RE:",#0,S:T=T+1:if T>5goto 1000
202 for A=1to 1500:next A:goto 5
205 print "_____BAD_LANDING!!":goto 201
500 CX=Z-10:CY=36:Y=36:print "_÷×÷
510 Z=Z+JX(1):Y=Y-1
520 CX=Z-10:CY=Y:print "_÷×÷
530 if Y<-0goto 600
540 goto 510
600 for A=-4to -34step -1:box Z+1,A,9,1,3:next A
610 if PX(Z+1,-32)goto 700
612 for A=-34to -4:box Z+1,A,9,1,2:next A
615 for A=1to 20:CX=Z-4:CY=Y:print "_-×-":CX=Z-2:CY=Y:print "_÷×÷":n
ext A
616 S=S+1000:CY=22:print "_____VERY_G00D!!
699 goto 201
700 for A=2to 38step 2:G=-A×5:NU=G:NM=G:VC=G+17×(G>70):VA=VC:VB=VC:b
ox Z+1,Y,A,A+2,3:next A:↓
701 goto 201
1000 CY=0:print "_____GAME_OVER":↓
1010 if TP(1)run
1020 goto 1010

ENTER>clear :for A=0to 49step 1:print "%(",#1,A,:input ")="%(A):next
↓
ENTER>[NUMBER STRING] PRESSING [GO] AFTER EACH ENTRY
     (NOTE) [READ EACH COLUMN DOWN WHEN ENTERING]

     221       0       0     128       0       8      52
      33       0       0       0       0      28     127
      34      40      40       0       0       8      65
      79       0       0       1       0      20      42
     213       0       0       8       0       0      28
     255     255     209      41       0       0       8
      51      51     201      79       0      28      20
ENTER>print ":BC=0:run "::print %(16384),1890[REC]
```

For those of you who are interested, we are using a COMMODORE 64 with SPEEDSCRIPT to do the printing on a COMMODORE MPS 801 Printer. Hopefully, we will soon have a better printer that reads a little better. (True descenders on lower-case letters, etc.) The Program listings with all the fancy stuff are done with George Moses' super listing Program that does it all automatically. (even counts the characters!!) If anyone out there has experience with COMMODORE Products, maybe you could suggest a nice but inexpensive Printer to use??? I'd be eternally grateful. Hopefully, by the time you read this, the next issue will be about ready to go to print. We will still come out with four issues this year, even if they are not exactly at regular intervals. If anyone has any questions, please send them in. We would like to have a "Questions" column, but so far have not recieved many to answer.

RED-HOT SPECIAL!!!

WE HAVE A LIMITED QUANTITY OF BASIC (6004) CARTRIDGES AVAILABLE. LIST IS $59.95, BUT WE ARE SELLING THEM FOR ONLY $6.95+$1.00 (US) HANDLING. SEND ORDER TO: DON GLADDEN, 59400 NINE MILE, SOUTH LYON, MI 48178

Dear Sirs,
  I am a student in high school in Cleveland, Ohio. I am greatly interested in the field of computer programming. I have purchased the Bally Arcade system and the Bally Basic cartridge for basic programming. I have a number of questions referring to the learning course booklet included with the cassette.
  On page 97 is a routine entitled "Decimal to Hex Converter". Please explain the value and uses of the hexidecimal system. On page 98 is a Character Code Table (Appendix A), Please explain to me the use of this table. On page 99 is Appendix 3 having to do with bus and connector structure. Please explain the use of this (even if it may be insignificant), and the Astro signals. On page 100 a light pen connector port is mentioned. Please inform me the use of this piece and how I may obtain, and what it will do. Page 101 is about a system memory map. I would like to know about this system and how I can work this on my unit. Page 102 has Appendix D. I'm sure if you explain what it is I can figure out how to use it. On page 103 is Appendix E. I would appreciate knowing of this and how it may be useful to me. On page 115 is another list that could be helpful to me, if I know how to use it. Please send me a list of books or attachments and a price list of material I can order.
  Thank you for your time.

Yours truly,
Doug Dunyan Jr.

Doug,
  I will try to briefly answer your questions in the order that you wrote them. The value of the Hexidecimal system is in programming in machine language. The Z80 microprocessor contained in your Arcade can be programmed in its own language which uses hexidecimal (base 16) numbers as its command words. You are more accustomed to using decimal numbers (base 10).

  Page 98 The Character Code Table is very important in doing word processing or in storing letters in memory as numbers, which your computer understands. Refer to pages 38 & 39 of the manual for a more complete explanation "Storing Text in Arrays."
  Page 99 Bus & Connector Structures refers to the signals present on each of the pins on the 50 pin connector in the back of your Arcade. These signals are only important if you are going to build your own memory expansion to plug into the Arcade.
  Page 100 Lite Pen Connector Port is on the right rear of your Arcade. It provides a 5 volt power supply for a lite pen that will allow you to draw on the screen or choose menu items by touching the screen with the lite pen. Two members of the B.U.G.S. have developed lite pens that work, but no one has found it economical to produce one as yet. Stay tuned!
  Page 101 System Memory Map shows the addresses in hexidecimal where different parts of the operating system are stored. If you know where these commands are you can call them and get them to work for you doing graphics, sounds and storing and moving large amounts of info at high speed. To learn how to peek and poke into screen ram which is the memory you can manipulate, study Lesson 10 on music and subscribe to The Arcadian users newsletter.
  Page 102 Input and Output Ports diagrams the numbers of the ports through which you can input data to your computer (input ports) and those through which the computer outputs data to the screen and loudspeaker (output ports). For more information order the Bally Basic Hacker's Manual from The Arcadian. For a demo of these ports in a program see the bottom of page 114 (3) The Direct Use of Sound Ports &(16) thru &(23). Also, see Mike Peace's excellent "Sound Port Study" on page 88.

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Page 103 Appendix E tells you where everything is stored in the AstroBasic cartridge by address. An ideal tutorial to read on peeking and poking into these areas is to be found in Volume I page 78 of The Arcadian, "Using the Bally Basic Text Area" by Dave Ibach.

Page 115 is a simple list of what you have bought in your computer; Memory; Inputs; Output Graphics; Output Audio, etc.

Contact The Arcadian, 3626 Morrie Drive, San Jose, CA 95127 for the monthly newsletter that will make a real hacker out of you in no time!!!

Sincerely,
GEORGE MOSES

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